```
#$%'()%+!, -!. , (*/!0123242!
      <u>., (*, $!056%, (%54</u>!!
       72-' *+!8(, *, 9, 1)!!
```

! ! : '&%)' 6!; 9*, 3' (!<=">!

!"#\$%&'!\$()%*#+,\$-.#\$%

? /2*!*, !6, !\\$!*/'!' &' \$*!, -!2!-\('!2)!2\$!' 4@1, +' 'A!

B&/012\#314/5!

C-!1, 92*' 6!, \$!6/012\gamma314/D!@511!*/' !-\(' !212(4!, \$!*/' !-(, \$*!E211!, -!*/' !@(,)9' \$\sigma4F! 01' (*!211!329G)*2H' !@' (-, (4' ()!2\$6!H5%' !*/' 4!*, !*/' !283/%9%42%: 292%4; <F!!

B&/012\cong 2>/I!

O1' (*!211!@' (-, (4' ()!, \$!)*2H' !%4 4' 6%2*' 1+F! 8511!%!*/'!-%('!95(*2%!1, 92*'6!, \$!32*, \$!"F! C-!29*, ()J@' (-, (4' ()!2('!5)%H!*/'!6('))%H!(,, 4)D!%)5('!*/2*!211!2('!\$, *%% 6F! #)'!*/'!'K%!2*!*/'!3, **, 4!, -!*/'!6/012%2>/!)*2%(E'11F!

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B!7; 9/% >/@; A62I!

C-!+, 5!2('!, @'(2*%\$H!*/'!6; A9B%C; 07BD!)*, @!211!), 5\$6)!2\$6!5)'!*/'!LH, 6M!4\P!*, !2\$\$, 5\$9'!*/'!

! (+#N' -+%+#%'N, =\$O\$N(%P\$' (@\$#0\% ! ?/2*!*,!6,!%!+,5!2('!2\$!' 4@1,+''0!

B!7; 9/% >/@; A62I!

C-!+, 5!2('!, @' (2*%H!*/'!6; A9B%C; O7BD!5)'!*/'!LH, 6M!4%P!*, !2\$\$, 5\$9'!*/'!-, 11, E%HA!LN26%)!2\$6!
O'\$*1'4'\$D!65'!*, !%\$91'4'\$*!E'2*/'(D!E'!2)G!*/2*!+, 5!@1'2)'!42G'!+, 5(!E2+!*, !*/'!-(, \$*!, -!*/'!)*2H'!
E/'('!2!., (*, \$!'4@1, +''!E%1!')9, (*!+, 5!*, !2\$!2('2!, -!('-5H'MF!O-*'(!*/%)!2\$\$, 5\$9'4'\$*D!/'1@!')9, (*!@2*(, \$)F!

C-!+, 5!2('!, @' (2*%H!*/'!314/%C; 07BD%5(\$!, \$!*/'!-511!)*2H'!E2)/!@(')'*!2\$6!3(%\$H!/, 5)'!1\h/*)!*, !-511F!?/'\$!*/2*!\%!9, 4@1'*'D!2)\%*!*/'!), 5\$6!3, 2(6!, @!\\$!9, ((211\%\$H!2\$6!')9, (*\%\$H!@2*(, \$)F!

BR0: F6/012I!

01' (*!211!@' (-, (4' ()!, \$!)*2H' !2\$6!329G)*2H' !%4 4' 6%2*' 1+F!

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? 21G!*, !-(, \$*!, -!)*2H' !2\$6!3' H%\$!')9, (*\%H!@', @1' !6, E\$!*/' !)*2H' !1' -*!2\$6!)*2H' !(\%H/*!)*2\%E' 11!2\$6! /2&' !*/' 4!)*2\$6!\%!*/' !H(' '\$!(, , 4!5\$*\%!*/(' 2*!\%)!, &' (F!

CU!SVW!O: WW. !: ; ; \times !UCNN7!#80!3' H%9!')9, (*%H!@2*(, \$)!%*, !*/' !. N' %R09B#; ; HL! C-!+, 5!2(' !2!<27>; 7H270!@1' 2)' !(' 42%!9214!2\$6!H, !*, !*/' !)*2%(E' 11!42(G' 6!LO(' 2!, -!: '-5H' M!%\$!*/' ! 1, 33+!, -!*/' !0' , (H' !7F!N%6)' +!S/' 2*(' F!

? /2*!*, !6, !%!+, 5!2('!2!@2*(, \$0!!

Y2141+!42G'!+, 5(!E2+!*, !*/'!)*2H'!2\$6!-, 11, E!211!\%)*(59*\%, \$)!H\%'\$!3+!*/'!., (*, \$!S'9/\$\%21!)*2--F! 81'2)'\!2)\\%'!*/'!6\\%231'6\!\%!H'**\\%H!5\\@!2\$6!6, E\$!2\$+!)*2\\()F! : '42\\%!\\%'!2('2!, -!('-5H'!5\\$*\\%!*, 16!, */'(E\%'F!

%' ?2062##\$O' "N% ' =O%06%0??%2H27129: G%726<; 962%2>>; 7/6%| 3??%72EA372% ?207%439F391%09B% :;; < <270/3; 9%7; H%2J27G; 92%9J; ?J2BL%

Τ

 $01E2+)!42G' !)5(' !*/2*!*/' !6' 9G!\%)!91' 2(' 6!, -!211!@' (), \$)!3' -, (' !+, 5!1, 26!, (!5\$1, 26!2\$!2(3, (!-(, 4!*/' ! H211' (+F!S/\%)!92\$!3' !6, \$' !3+!+' 11\%H!L: ?207\%42\%03?TUF![, $\\^*!3' !)/+F!OE2\%!2!(')@, $\)' !, -!L\#03\%, ?207U! 3' -, (' !4, &\%H!E' \\\\\\^*)F!$

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. '&' (!21*' (!, (!(' 4, &' !2$+!429/%' !, (!3126' !H52(6)F!! 01E2+)!3' !2E2(' !, -!+, 5(!)5((, 5$6%H)!! ? /' $!@, E' (%$H!5@!2$+!*, , 1!21E2+)!21' (*!*/, )' !2(, 5$6!+, 5!*, !@, *' $*%21!$, %' !, (!6' 3(%F!!!
```

=0BB276!

O'\$'(21!)2-'*+!H5%'1%')!@'(*2\\\\)!!!! (*2\\\\\)|!. -!2\\\)/, @!1266'()D!\\\\\)9156\\\\\]|0]-(24'!2\\\)! (*2\\\\\\)| \$!1266'()A!!!!

C\$)@' 9*!@, (*231' !1266' ()!-(' ^5' \$*1+D!2\$6!42%\$*2%\$!*/' 4!%\$!@(, @' (!E, (G%H!, (6' (D!-(' '!-(, 4!, %D!H(' 2)' D! , (!, */' (!)1\\mathreal{n})@' (+!42*' (\partial{n})1\)!!!

: ' 4, &' !6' -' 9*\\mathreal{n}' !1266' ()!-(, 4!)' (&\mathreal{n})' !2\$6!(' @, (*!*/' !6' -' 9*!*, !+, 5(!)5@' (&\mathreal{n}), (F!!

8129' !1266' ()!, \$!)*231' !32)')D!\$' &' (!5)' !3, K')D!9/2\()D!, (!, */' (!5\$)*231' !)5(-29')!\%\$!@129' !, -!2!1266' (F!!

. '&' (!5)' !2!1266' (!E/%' !21, \$' !\%!*/' !-29\%+F!!

. '&' (!E21G!5\$6' (!1266' ()!E/%' !%\$!5)' F!!

=3>/391%09B%00/2730?%@09B?391!

 $a29G!@2\%!2\$6!\%_{5}(\%)!('12*'6!*,!1\%*\%H!2\$6!42*'(\%21!/2\$61\%H!2('!),4'!,-!*/'!4,)*!-('^5'\$*!*+@')!,-!\%_{5}(\%)F!\\ 7*2H'!@\%9')!2('!,-*'\$!2EGE2(60!/'2&+D!,(!,661+!)/2@'D!E/\%/!42G')!*/'4!6\%-\%951*!*,!1\%*!@(,@'(1+F!!))$

O)G!+, 5()'1-!*/')'!^5')*% \$)!3'-, ('!1%*%\$H!+, 5(!1, 26A!!

!()!%!*, ,!12(H'!, (!/'2&+!-, (!, \$'!@'(), \$!*, !1%*Q!! ![,!+,5!\$''6!2!4'9/2\$%21!2%!, (!@2(*\$'(Q!! !O('!*/'('!2\$+!*(%@%\$H!/2P2(6)!, \$!+,5(!(,5*'Q!! !?%!!+,5!3'!231'!*,!H'*!*/(,5H/!6,,(E2+)!,(!9,((%,()!2)!+,5!2('!92((+%\$H!*/'!,3_'9*Q!!

: '4'43'(!*,!E'2(!)5@@,(*%'!\$,\$])1\@!91,)'6]*,'!)/,')!*,!/'1@!2&,\%!2!-211!E/\%'!92((+\\$H!+,5(!1,26F!\congress!),4'!92)')\!@(,*'9*\&'!E,(G!3,,*)!E\%'!)*''1!*,'!('\\$-,(9'4'\$*!2\$6!,*/'(!)2-'*+!-'2*5(')!42+!3'!('^5\%'6F![\\95))!\@(,@'(!-,,*E'2(!E\%/!+,5(!)5@'(&\\),(!,(!Y24@5)!\Vb7!;-!9'F!U,11,E!*/')'!)2-'!*\\\$H!*'9/\$\%5')\!!

!7*2\$6!91,)' !*, !*/' !1, 26!c!Y2((+%H!2\$!, 3_' 9*!2)!91,)' !*, !+, 5(!3, 6+!2)!@,))%31' !E%1!(' 659' !*/' !)*(2\%!, \$!!! +, 5(!329G!2\$6!/' 1@!42\%*2\%!3212\$9' F!!

!\%*!E\%'/!+, 5(!1' H)!c!\(\psi\)\\%\H!+, 5(!1' H!45)\(91'\)!/' 1\(\end{a}\))!/' 1\(\end{a}\)!\(\gamma\)!\(\gamma\)' \(\end{a}\)!\(\gamma\)' \(\end{a}\)!\(\gamma\)' \(\end{a}\)!\(\gamma\)' \(\end{a}\)!\(\gamma\)' \(\end{a}\)!\(\gamma\)' \(\end{a}\)!\(\gamma\)' \(\end{a}\)!\(\gamma\)' \(\end{a}\)' \(\end

O(\(\pi_!\frac{1}{1}\), 26!) '95('1+!c!O'\frac{1}{2}\), 6!/2\(\frac{1}{1}\), \$!\frac{1}{1}\), 26!3' -, ('!+, 5!1\(\pi_*\frac{1}{1}\), !2\(\pi_*\frac{1}{1}\), 26!) '\(\pi_*\frac{1}{1}\), 26!3' -, ('!+, 5!1\(\pi_*\frac{1}{1}\), 12\(\pi_*\frac{1}{1}\), 13\(\pi_*\frac{1}{1}\), 13\(\pi_*\frac{1}\), 13\(\pi_*\frac{

N, E' (%\$H!*/'!1, 26!c!X2G'!)5('!+, 5!G''@!*/'!1, 26!91,)'!*, !+, 5D!2\$6!5)'!+, 5(!1'H)!E/%'!1, E' (%\$H!*/'! 1, 26!*, !*/'!-1, , (F!!

W29/!9/' 4%21!9, \$*2%' (!/2)!2!42\$5-29*5(' (\)!123' 1!E%/!*/' !9/' 4%21!\$24' B) ID!/2P2(6!E2(\$%H)D!2\$6!*/'! 42\$5-29*5(' (\)!\$24' !2\$6!266('))F!N23' 1)!45)*!\$, *!3' !(' 4, &' 6F!C-!)' 9, \$62(+!9, \$*2%' ()!2(' !5)' 6D!*/,)'! 9, \$*2%' ()!45)*!21), !3' !123' 1' 6!E%/!*/' !%-, (42*% \$F!!

W29/!@(, 659*!E%1!/2&' !2!72-' *+![2*2!7/' ' *!B7[7!!*/2*!9, \$*2%\$)!*/' !-, 11, E%\$HA!!

8/+)%2!!@(, @' (*%)! U124423%*+!2\$6!-%(']!-\H/*\\$H!\\\$-, (42*\\\$!! V'21*/!/2P2(6)!! W4'(H'\$9+!2\$6!-\%)*!2\\6!@(, 9'65(')!! 7*23\\%+!2\$6!)@'9\\2!!)*, (2H'!9, \$)\\6'(2*\\\$)!! 7@\\10!1'2\\6!\\6@,)2!!@(, 9'65(')!! 8'(), \$2!!@(, *'9*\\\$!\\\$-, (42*\\\$!!

e, 5(!)5@' (&%), (!E%1!%6' \$*%+!E/%9/!@(, 659*)!E%1!3' !5)' 6!-, (!*/' !)' *!9, \$)*(59*%, \$F!O11!' 4@1, +' ')!E%1!(' 9' &&'! *(2%5%5H!, \$!*/' !1, 92*%, \$!2\$6!9, \$*' \$*!, -!*/' !7 [7f!*/' !(' ^5%(' 6!2@@(, @(%2*' !@(, *' 9*%, \$!f!2\$6!*/' !@(, @' (!5)' D!)*, (2H' D!2\$6!6%@,)21!, -!' 29/!@(, 659*F!

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=314/391%0>2/G%

#)%\$H!WK*' \$)% \$!Y231')!!

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